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CLAIMS

What is claimed is:

1. A method of determining a target load for a reverse link channel in a wireless communication network, comprising:

determining a target frame error rate; and

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computing the target load as a function of the target frame error rate.

2. The method of claim 1 wherein the target frame error rate is the frame error rate after frame selection by a base station controller.

3. The method of claim 1 wherein computing the target load as a function of the target frame error rate comprises:

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determining a target frame erasure rate for a radio base station that

approximately yields the desired frame error rate; and

computing the target load as a function of the target frame erasure rate.

4. The method of claim 3 wherein computing the target load as a function of the target frame erasure rate comprises :

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computing an adjustment factor as a function of the target frame erasure rate;

and

multiplying a current target load by the adjustment factor to get a new target load.

5. The method of claim 4 wherein computing an adjustment factor as a function of

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the target frame erasure rate comprises determining an error ratio based on the ratio of a measured frame erasure rate for a current period to the target frame erasure rate, and computing the adjustment factor based on the error ratio.

6. The method of claim 5 wherein the adjustment factor is computed according to:

$$\left(\alpha + (1 - \alpha) \frac{\hat{\varepsilon}}{\varepsilon(n)} \right) L_T(n),$$

- 5 where α is a smoothing factor, $\hat{\varepsilon}$ is the desired target frame erasure rate, and $\varepsilon(n)$ is the measured frame erasure rate at period n .
7. The method of claim 6 wherein the target load is limited to a load less than or equal to a maximum load.
8. The method of claim 3 wherein computing the target load as a function of the
- 10 target frame erasure rate comprises:
- computing a target load adjustment as a function of the target frame erasure rate and a measured frame erasure rate; and
- adding the target load adjustment to a current target load to get a new target load.
- 15 9. The method of claim 8 wherein the target load adjustment is variable depending on the measured frame erasure rate.
10. The method of claim 8 wherein the target load adjustment is a fixed amount.
11. The method of claim 10 wherein the target load adjustment is different for upward adjustments and downward adjustments.
- 20 12. The method of claim 1 wherein determining a target frame error rate comprises determining an average target frame error rate for a plurality of mobile stations.
13. The method of claim 1 wherein determining a target frame error rate comprises determining user dependent target frame error rates for a plurality of mobile stations.
14. The method of claim 13 wherein computing the target load as a function of the
- 25 target frame error rate comprises determining a per user target load adjustment based on the user dependent target frame error rates, summing the per user target load adjustments to obtain a combined target load adjustment, and adding the combined target load adjustment to a current target load to obtain a new target load.

5 15. The method of claim 1 further comprising controlling data transmission rates of mobile stations transmitting on the reverse link channel to maintain a measured reverse link load approximately equal to the target load.

16. A base station comprising:
receive circuits to receive simultaneous signals from a plurality of mobile stations

10 over a shared reverse link channel;

control circuits for determining a target load for controlling data transmission rates of mobile stations transmitting on the reverse link channel, the control circuits operative to:

determine a target frame error rate;

15 compute the target load as a function of the target frame error rate.

17. The base station of claim 16 wherein the target frame error rate is the frame error rate at a base station controller after frame selection.

18. The base station of claim 16 wherein the control circuits compute the target load
20 by:

determining a target frame erasure rate at the base station that yields the target frame error rate; and

computing the target load as a function of the target frame erasure rate.

19. The base station of claim 18 wherein computing the target load as a function of
25 the target frame erasure rate comprises:

computing an adjustment factor as a function of the target frame erasure and a measured frame erasure rate; and

multiplying the current target load by the adjustment factor to get a new target load.

5 20. The base station of claim 19 wherein computing an adjustment factor as a function of the target frame error rate and a measured frame error rate comprises determining an error ratio based on the ratio of the measured frame erasure rate for a current period to the target frame erasure rate, and computing the adjustment factor based on the error ratio.

10 21. The base station of claim 20 wherein the adjustment factor is computed according to:

$$\left(\alpha + (1 - \alpha) \frac{\hat{\varepsilon}}{\varepsilon(n)} \right) L_T(n),$$

where α is a smoothing factor, $\hat{\varepsilon}$ is the desired target frame erasure rate, and $\varepsilon(n)$ is the measured frame erasure rate at period n .

15 22. The base station of claim 21 wherein the target load is limited to a load less than or equal to a maximum load.

23. The base station of claim 18 wherein computing the target load as a function of the target frame erasure rate:

computing a target load adjustment as a function of the target frame erasure rate

20 and a measured frame erasure rate; and

adding the target load adjustment to a current target load to get a new target load.

24. The base station of claim 23 wherein the target load adjustment is variable depending on the measured frame erasure rate.

25 25. The base station of claim 24 wherein the target load adjustment is a fixed amount.

26. The base station of claim 25 wherein the target load adjustment is different for upward adjustments and downward adjustments.

5 27. The base station of claim 16 wherein the target frame error rate is an average target frame error rate for a plurality of mobile stations.

28. The base station of claim 16 wherein the target frame error rate comprises user dependent target frame error rates for a plurality of mobile stations.

29. The base station of claim 28 wherein computing the target load as a function of
10 the target frame error rate comprises determining a per user target load adjustment based on the user dependent target frame rates, summing the per user target frame adjustments to obtain a combined target load adjustment, and adding the combined target load adjustment to a current target load to obtain a new target load.

30. The base station of claim 16 further wherein the control circuits further control the
15 data transmission rates of mobile stations transmitting on a reverse link channel to maintain a measured reverse link load approximately equal to the target load.

31. A method of determining a load threshold used for rate control in a reverse link channel in a wireless communication network, comprising:

determining a target frame error rate;

20 computing the load threshold as a function of the target frame error rate.

32. The method of claim 31 wherein the load threshold is a maximum load.

33. The method of claim 31 wherein the load threshold is a minimum load.

34. The method of claim 31 further wherein determining a target frame error rate comprises determining user dependent target frame error rates for a plurality of mobile
25 stations.

35. The method of claim 34 wherein computing the target load as a function of the target frame error rate comprises computing a combined target load adjustment based on the user dependent target frame error rates for the plurality of mobile stations.

36. The method of claim 35 wherein computing a combined target load adjustment
30 based on the target frame error rates for the plurality of mobile stations comprises

5 determining a per user target load adjustment based on the user dependent target frame error rates, summing the per user target load adjustments to obtain a combined target load adjustment, and adding the combined target load adjustment to a current target load to obtain a new target load.

37. A method of determining a target load for a reverse link channel in a wireless
10 communication network, comprising:
measuring a frame error rate;
computing the target load as a function of the measured frame error rate and a target frame error rate.

38. The method of claim 37 wherein the measured frame error rate is the frame
15 erasure rate at a base station.

39. The method of claim 38 wherein the target frame error rate is a target frame erasure rate at the base station.

40. The method of claim 39 wherein the target frame erasure rate at the base station
is selected to yield a desired frame error rate after frame selection at a base station
20 controller.

41. The method of claim 37 wherein computing the target load as a function of the measured frame error rate and a target frame error rate comprises:

computing an adjustment factor; and
multiplying a current target load by the adjustment factor to obtain a new target
25 load.

42. The method of claim 41 wherein computing an adjustment factor comprises computing a ratio of the target frame error rate to the measured frame error rate.

43. The method of claim 37 wherein computing the target load as a function of the measured frame error rate and a target frame error rate comprises:

30 computing a target load adjustment; and

- 5 adding the target load adjustment to a current target load to obtain a new target
 load.
44. The method of claim 43 wherein the target load adjustment is variable depending
on the measured frame error rate.
45. The method of claim 43 wherein the target load adjustment is fixed.
- 10 46. The method of claim 45 wherein the target load adjustment is different for upward
and downward adjustments.
47. A base station comprising:
 receive circuits to receive simultaneous signals from a plurality of mobile stations
 over a shared reverse link channel;
- 15 a circuit to measure a frame error rate;
 control circuits for determining a target load for controlling data
 transmission rates of mobile stations transmitting on the reverse
 link channel, wherein the target load is determined as a function of
 the measured frame error rate and a target frame error rate.
- 20 48. The base station of claim 47 wherein the measured frame error rate is the frame
erasure rate at a base station.
49. The base station of claim 48 wherein the target frame error rate is a target frame
erasure rate at the base station.
50. The base station of claim 49 wherein the target frame erasure rate at the base
25 station is selected to yield a desired frame error rate after frame selection at a base
station controller.
51. The base station of claim 47 wherein the control circuits compute the target load
by:
 computing an adjustment factor; and

5 multiplying a current target load by the adjustment factor to obtain a new target
load.

52. The base station of claim 51 wherein the control circuits compute the factor by
computing a ratio of the target frame error rate to the measured frame error rate.

53. The base station of claim 47 wherein the control circuits compute the target load

10 by:

computing a target load adjustment; and

adding the target load adjustment to a current target load to obtain a new target
load.

54. The base station of claim 43 wherein the control circuits compute a variable
15 target load adjustment depending on the measured frame error rate.

55. The base station of claim 43 wherein the target load adjustment is fixed.

56. The base station of claim 45 wherein the target load adjustment is different for
upward and downward adjustments.

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